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Completing a Financial Revolution: The Finance of the Dutch East India Trade and the Rise of the Amsterdam Capital Market, 1595–1612

OSCAR GELDERBLOM AND JOOST JONKER

The article analyzes the evolution of the Amsterdam capital market as a consequence of Dutch overseas expansion and the introduction of transferable VOC shares. Offering investors prospects of speculative gains without serious loss of liquidity, these instruments created a booming secondary market offering a wide range of allied credit techniques. By 1609 this market had become sufficiently strong to dictate terms for new public debt issues. These findings show that, contrary to commonly held notions about the emergence of secondary markets, private finance took precedence over public finance in the Dutch Republic.

Capital markets exist to accumulate and distribute savings. Their performance depends on the successful marrying of two inherently opposed requirements. Savers want liquidity, i.e., the possibility of converting their assets back into cash at low cost and short notice. On the other hand, investors need continuity, an assured supply of capital for the duration of the venture concerned.[1] Economic historians of the early modern period generally focus on the latter requirement, the development of financial instruments to satisfy the demand of governments, business corporations, and merchants.[2] However, without

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[1] A balanced analysis of the role of capital markets appears in Levine, "Financial Development."

[2] On the mobilization of capital for early modern states see: for the Dutch Republic: Tracy, *Financial Revolution*; and 't Hart, *Making of a Bourgeois State*; for England: Dickson,

a simultaneous solution to the supply side requirement—liquidity—capital markets would not have emerged. Owing to the perennial scarcity of coin, tight liquidity constraints appear to have hampered business just as much as the absence of mechanisms for accumulating capital.[3] These circumstances put a premium on finding new devices to create liquidity.[4]

Economic historians consider England's financial revolution of the late seventeenth and early eighteenth century a landmark in the rise of modern financial systems for it combined the consolidation of public debt with the creation of a secondary market for government bonds.[5] Regular trade in South Sea annuities and consols widened investment options for savers, attracted a growing number of them, and thus enhanced the crown's ability to mobilize funds. In itself England's consolidation of public debt was nothing new. When William of Orange acceded to the English throne in 1689, he introduced well-tried financial techniques from the Dutch Republic. Indeed, a consolidated public debt was already created in Holland in the mid-sixteenth century, and perhaps even earlier in Venice, Genoa, and Florence.[6] Larry Neal has argued that what truly set England apart was the creation of a secondary market, which greatly increased the liquidity of government bonds.[7] In his view the Dutch financial revolution of the sixteenth century was never carried to term, because the great variety of public securities prevented the emergence of a secondary market for government bonds.[8]

True, there was no bustling secondary market for public debt in the Dutch Republic. State archives and notarial records do reveal transfers of government bonds, but there were no prices quoted in Amsterdam's

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Financial Revolution; and North and Weingast, "Constitutions"; for France: Hoffman, Postel-Vinay, and Rosenthal, *Priceless Markets*; on the mobilization of capital for business corporations and merchants: Ehrenberg, *Zeitalter der Fugger*; and Chaudhuri, *English East India Company*.

[3] Compare Parker, "Emergence."

[4] De Roover, *Money*; Van der Wee, "Anvers"; and Schnapper, *Rentes*. More recent contributions on the importance of liquidity for the development of financial markets are: Michie, "Invisible Stabilizer"; and Neal, "How it all Began."

[5] Dickson, *Financial Revolution*; and Neal, *Rise*. Compare for a general overview of the literature on the rise of modern financial systems: Sylla, "Financial Systems."

[6] Compare for the development of public finance in the Habsburg Netherlands: Tracy, *Financial Revolution*. Marjolein 't Hart and Wantje Fritschy have detailed the development of public finance in the later sixteenth and seventeenth century: 't Hart, *Making*; Fritschy, "Public Finance Revolution"; 't Hart, "Merits"; and Fritschy and Van der Voort, "From Fragmentation." On Venice see Müller, *Venetian Money Market*. On Genoa see Heeres, *Gênes*, pp. 147–62. On Florence see Braudel, *Civilisation matérielle*, vol. 2, chapter 1.

[7] Neal, *Rise*, pp. 14–16, and "How it all Began." Compare also Jonker, "Competing."

[8] Neal, "How it all Began," pp. 122–23.

price journals, and bonds were rarely pledged as collateral.[9] This does not mean the Dutch financial system was flawed, however. The present analysis of the finance of Dutch East India trade between 1595 and 1612 will show that shortly after the foundation of the Verenigde Oostindische Compagnie (Dutch East India Company, hereafter VOC) in 1602, a vigorous secondary market for VOC shares emerged in Amsterdam, with all its beneficial effects on public and private finance. Investors started borrowing on the security of VOC shares, they began to speculate, and they even staged the world's first ever bear raid in 1609/10—changes that run counter to Neal's claim that the transfer of VOC shares was too cumbersome to create a viable secondary market.[10]

This article uses company records, notarial deeds, government ordinances, and the business papers of an Amsterdam merchant to reconstruct the finance of Dutch East India trade between 1595 and 1612. Despite many publications on the early stages of Dutch colonial expansion, we still know very little about the actual capital requirements of the first voyages to Asia.[11] Besides, even the most detailed studies on the shareholders of the VOC are generally silent on the financial techniques used to fund their investments, other than the placing of shares amongst relatives and friends.[12] The same is true for the origins and technical details of the secondary market for VOC shares that emerged after 1602.[13] Even Johannes van Dillen, known for his intimate knowledge of the company's early history, failed to use extant company ledgers in his otherwise very detailed analysis of Isaac le Maire's famous bear raid on the VOC.[14]

[9] Incidental transfers of public annuities and bonds from the 1570s onwards have been documented by Tracy, *Financial Revolution*, p. 90 note 50, p. 119.

[10] Neal, *Rise*, pp. 10, 16. Compare also Dickson, *Financial Revolution*, pp. 459–64.

[11] Van Dillen, *Aandeelhoudersregister*, pp. 5–11, 34–45; De Korte, *Financiële verantwoording*; and Gaastra, *Geschiedenis*, pp. 23–29.

[12] Even the most detailed studies on the social and economic background of VOC shareholders are generally silent on the issue of financial techniques. Compare Van Dillen's very elaborate analysis of the shareholders of the Amsterdam chamber of the VOC in *Aandeelhoudersregister* and several more detailed case-studies: Vaz Dias, "Deelname Marranen"; Stols, "Zuidelijke Nederlanden"; and Degryse, "Zuid-Nederlands kapitaal." See analyses of the shareholders of the Middelburg chamber in Unger, "Inschrijvingsregister; and Enthoven, *Zeeland.* For Enkhuizen, see Willemsen, "Beleggers."

[13] General studies on Dutch East India trade include: Van der Chijs, *Geschiedenis*; Van Dillen, *Oudste aandeelhoudersregister*; Gaastra, *Geschiedenis VOC*. On the legal status of the VOC and the early companies see: Van der Heijden, *Ontwikkeling*; and Mansvelt, *Rechtsvorm*. On the VOC's business organization see: Steensgaard, "Dutch East India Company."

[14] Van Dillen, "Isaac le Maire." See also Smith, *Tijd-affaires*. A notable exception is Willemsen, ("Beleggers," pp. 75–79), who reconstructed the first ten years of trading in shares of the Enkhuizen chamber.

FUNDING OPTIONS IN DUTCH LONG-DISTANCE TRADE

At the turn of the seventeenth century, the Dutch Republic emerged as Europe's leading economy.[15] After the Spanish occupation of Antwerp in 1585 and the subsequent Dutch naval blockade of the river Scheldt and the Flemish coast, commercial hegemony shifted to Holland and Zeeland, with Amsterdam as the single most important market. Dutch merchants, previously oriented towards trade in foodstuffs and raw materials between the Baltic area and the Atlantic coasts of France, Spain, and Portugal, started trading in Russia, Italy, the Levant, West Africa, America, and Asia. Traditional shipments of grain, salt, herring, and wine were supplemented with luxury textiles, sugar, metals, jewellery, weapons, spices, and a huge range of other manufactures and colonial products.

The expansion of trade, both in Europe and overseas, set new capital requirements for merchants in Amsterdam. Trips to Italy, West Africa, or South America pioneered during the late 1580s and 1590s took much longer to complete than the Baltic run, the artery of the Dutch Republic's foreign trade. As often as not, Baltic ships did two to three round trips in the sailing season, but a single voyage to Italy or West Africa and back took ten to 12 months. Fitting costs were further increased by the need to carry heavy armament, something ships in Northwestern Europe rarely required; potential threats from Dunkirk or other privateers were usually parried by sailing in convoy, if necessary with navy protection.

Funding options for long-distance trade in late-sixteenth-century Amsterdam were not really different from those used by businessmen today: merchants could finance their firm with retained earnings; with credit, for instance by drawing bills, selling bonds or accepting deposits; or through raising equity by seeking fresh partners or issuing shares.[16] Bills of exchange were unsuitable vehicles for attracting capital. These instruments functioned as an interlocal means of settlement, with the postponed payment doubling as a credit facility.[17] Undoubtedly merchants would have used it as a means of credit. However, because bills had not yet gained a very strong foothold in Amsterdam during the last quarter of the sixteenth century, circulating too many bills, or rolling them over all too regularly, would have raised eyebrows, so they

[15] On the Dutch commercial expansion between 1580 and 1650, and the dominant role of Amsterdam in Dutch foreign trade, see Israel, *Dutch Primacy*; and De Vries and Van der Woude, *First Modern Economy*.
[16] Neal, "Finance of Business", notably pp. 153–57.
[17] Neal, *Rise*, pp. 5–7.

are unlikely to have served as more than a temporary and incidental expedience.[18]

For the first voyages to Italy, West Africa, and the Caribbean, reinvesting profits and widening partnerships, with active or sleeping partners, were the two principal funding strategies. At about 25,000 guilders per ship the outlay for such expeditions was hardly astronomical, well within the means of temporary partnerships. The Leiden merchant Daniel van der Meulen had a string of such ventures to Italy with three or four colleagues, whereas the Guinea trips in which Claes van Adrichem from Delft took part numbered even more participants.[19] One of them counted 15 members, though the investment was similar in size and duration to Italian voyages. The rapid expansion of trade to Italy, West Africa, and the Caribbean suggests that finding capital and partners was no problem at all. During the 1590s an average of 12 ships a year sailed for Italy.[20] The West African and Caribbean trades were a little slower to start, but both attracted at least 20 ships a year by 1600.

As West African trade grew, it spawned larger partnerships running more than just a single ship. Eventually this led to the establishment of more permanent companies selling equity shares.[21] In Holland this *partenrederij* was common practice in economic sectors with large fixed investments, such as shipping and milling. In 1565 the Dutch Baltic fleet alone numbered 700 ships, often run by companies with part-ownership down to 1/32, 1/64 or 1/128th shares.[22] Thus, a sizeable number of people must have been familiar with share-ownership. As a rule, one of the owners acted as bookkeeper-manager, charging a commission to the company for services rendered. *Partenrederijen* normally settled their accounts after each trip, the owners sharing profits and losses in proportion to their stake. In the seventeenth century, milling companies held regular meetings to brief shareholders about the results.[23]

[18] Jonker and Sluyterman, *At Home*, pp. 29–30.
[19] Jonker and Sluyterman, *At home*, pp. 24–25, 30; and Kernkamp and Klaassen-Meijer, "Rekeningen."
[20] Hart, "Italië-vaart," p. 48.
[21] Van Gelder, "Scheepsrekeningen"; Unger, "Nieuwe gegevens," p. 199; Kernkamp and Klaassen-Meijer, "Rekeningen," pp. 5, 14; *Pace* Israel, *Dutch Primacy*, pp. 60–61, 63–65, who considers the West African trade to have been very capital intensive.
[22] De Vries and Van der Woude, *First Modern Economy*, pp. 358, 403.
[23] On *partenrederijen*, see Riemersma, "Trading and Shipping Associations"; and Hart, "Rederij." In the first decades of the seventeenth century a similar business organization was used in whaling (see Muller, *Noordsche Compagnie*; and Hart, "Eerste Nederlandse tochten"); sawmills (see Van Dillen, *Bronnen bedrijfsleven*, vol. 2, nrs. 1250, 1445); and peat digging (see Keikes, "Veenexploitaitie"). On milling societies in the seventeenth century, see Duplessis, "Probate inventories"; and Ankum, "Bijdrage geschiedenis olieslagerij."

We know far less about yet another funding option for long-distance trade: deposits and bonds. Any merchant firm would have interest-paying current accounts with its correspondents and thus possess some deposits. In addition, we may assume that businessmen would sometimes accept deposits from family members or close friends, as a cover against temporary shortfalls caused by business fluctuations or by family circumstances such as succession and estate arrangements, or as a favor to render cash surpluses profitable for someone without direct access to the market. Evidence for such deposits has to be drawn from the relevant business records. The ledgers of Hans Thijs, an Antwerp merchant who migrated to Amsterdam during the 1590s, suggest that deposits could supply a major part of funding. From 1592, when the estate of Thijs's father was finally wound up, Thijs had as a rule 10,000–20,000 guilders of family deposits at his disposal. At his death in 1611 deposits totaled 34,000 guilders on total assets of 255,000, or just over 13 percent.[24] Daniel van der Meulens's 1600 estate had deposits of nearly 12,000 pounds Flemish on a total of 25,602 pounds, or 46 percent.[25] Until we have more information about merchants' balance sheets, we simply cannot say what part deposits played in commercial firms overall.

Bonds also appear to have been used fairly widely. These IOUs, or bills obligatory as they were called, originated in rebates on the purchase of goods. They surfaced in the Low Countries during the fifteenth century. Herman van der Wee has shown how bills obligatory developed into negotiable bearer instruments in Antwerp.[26] However, because IOUs carried a single signature, rather than the three that underpinned bills of exchange as an international negotiable instrument, their circulation is likely to have remained restricted to a fairly narrow circle of a merchant's direct or mediated acquaintances, i.e., persons who would know the debtor in person or accept his IOU on the

[24] Gelderblom, *Zuid-Nederlandse Kooplieden*, p. 144.
[25] Prinsen Lzn, "Notarisprotocol," pp. 163–64.
[26] Van der Wee, "Anvers." pp. 1071–081; GAA NA (Amsterdam City Archives, Notarial Archives) 1/522, 12-07-1585; GAA NA 9/7, 28-01-1591; GAA NA 8/147v-148, 08-10-1591; GAA NA 8/200, 14-02-1592; GAA NA3/494, 31-03-1599. Dutch terms for debt instruments had not really crystallized at the time, as they appear to have done in England, where a clear distinction existed between obligations as bonds, in other words legally enforceable securities pledged to lenders, and obligations as private debt contracts, in other words informal promissory notes. See Postan, "Private Financial Instruments," pp. 35–37; and Trevor-Roper, "Elizabethan Aristocracy," 281–88. The Dutch term "obligatie" covered more or less any debt instrument ranging from private promissory notes to formal debt paper issued by city councils. We have preferred to use the term bond for formal debts embodied in a ledger entry or a formal document, rather than translating "obligatie" into the equally vague English term obligation.

recommendation of a mutual friend.[27] Consequently, such IOUs never developed into fully negotiable titles. This aspect made Van der Wee conclude that the instrument, though it continued to be used as a means of payment or caution money, contributed very little to the development of the Amsterdam capital market.[28]

However, from the 1540s onwards, merchants also issued IOUs to borrow money for periods up to 12 months.[29] An article in the 1582 Antwerp *Costuymen* stipulated that both merchants and ordinary people could borrow money at 6.25 percent, under the condition that the maturity of the debt was stipulated in the bill.[30] In the Dutch Republic IOUs were also used to raise money.[31] Amsterdam notarial deeds from the early 1580s reveal bills obligatory issued by private individuals. The city of Amsterdam issued IOUs from the 1590s onwards, for debts ranging from 600 to 3,000 guilders that ran for any period of time between three and 12 months.[32]

The first explicit reference to IOUs as a means to fund commercial enterprise comes from the 1594 estate of an Amsterdam broker.[33] In a notarial deed from the year 1608, two merchants and a broker described in detail the workings of a private credit market built around IOUs. Their testimony suggests an intensive use of such bonds amongst merchants, based on a set of customs about conditions and terms presumably derived from the Antwerp *Costuymen*, as the regulations on bills of exchange were. Rolling over bills on expiry for period of up to two years, sometimes even longer, appears to have been common.[34]

[27] Postan, "Private," pp. 57–58; and Van der Wee, "Monetary systems," p. 301. Compare, for example, the cession of 25 bills obligatory signed by various merchants from the Antwerp merchant Wouter de Schot to his brother-in-law, Balthasar Jacot, also a merchant from Antwerp GAA NA 3/494, 31-03-1599.

[28] Van der Wee, "Anvers," pp. 1080–81.

[29] Van der Wee, *Growth*; and De Smedt, "Antwerpen." Technically one should make a distinction between deposits and bonds. Whereas a lender could recover the former at short notice, a few weeks at most, the latter had a fixed maturity with an option for renewal. De Roover, "Anvers," pp. 1037–38.

[30] Antwerpse Costuymen, 1582, Title LI-13, p. 390; published at: http://www.kulak.ac.be/facult/rechten/Monballyu/Rechtlagelanden/Brabantsrecht/brabantsrechtindex.htm.

[31] A general discussion of credit instruments used in Amsterdam in the seventeenth century appears in Spufford, "Access to Credit," pp. 304–05.

[32] Van der Burg and 't Hart, "Renteniers." These "obligaties" were generally described by the interest paid to bearer every year. Compare, for example, GAA NA 1/249, 11-04-1582; and GAA NA 1/436, 25-04-1584. For the town council bonds specimens, see GAA NA 23/263bis, 01-11-1595; GAA NA 23/352, 06-06-1596; and GAA NA 5B/146, 29-03-1607.

[33] The maturity of these "obligaties", quoted as 648 guilders and 108 pounds Flemish was set at one year, which would imply interest rates of 6 percent and 8 percent, respectively. Besides these two bills, the estate contained two "bekentenissen" or IOUs, one of 648 guilders or 8 percent, and one of 300 guilders plus interest (GAA NA 32/254-261, 15 November 1594).

[34] Wallert, *Ontwikkelingslijnen*; and Dehing and 't Hart, "Linking the Fortunes," p. 42; The testimony in GAA NA 196/71, 27 August 1608.

Evidence for the use of bills obligatory is not limited to legal provisions dealing with them. The Thijs ledgers suggest that bonds were indeed sufficiently common to offer a sound and flexible funding option. During his early career in Poland, Thijs set up his jewelry trade relying on funds supplied by private investors on IOUs for a total of up to 10,000 guilders. We have seen how he switched to using family deposits from 1592, but six years later Thijs again began to seek additional funding by borrowing heavily on the market. Until the autumn of 1602 he wrote IOUs to 24 different creditors, for a total of 30,000 guilders. The bonds covered amounts of up to 4,200 guilders at 7–8 percent interest and a maturity of three to 12 months; many of them were rolled over on expiry. On Thijs's death in 1611, bonds totaled 100,580 guilders or almost 40 percent of total assets.[35] The 1620 estate of the Antwerp émigré merchant Paulus Bosschaert shows a similar preponderance of bonds.[36]

In brief, available traditional methods of business organization and finance possessed sufficient scope and stretch to power the increasingly capital-intensive ventures in Europe, to Africa, and into the Caribbean. The next step, Asia, posed a formidable challenge, however.

FINANCING THE ASIAN TRADE

From 1595 onwards, expeditions to Asia changed the demand for capital in three key respects. First, at 100,000 guilders per ship, the sums needed were two to four times the amount of trips to, say, Africa or the Caribbean.[37] Such demands were beyond the means of both individual merchants and traditional associations with a limited number of partners. Second, the distance and time involved multiplied risk; during the pioneering years 1595–1601, more than 20 percent of ships sent out to Asia were lost.[38] Third, capital would remain tied up for a much longer period because round trips to Asia took about two years to complete. Investors might then expect a first and sometimes generous dividend, but that was not the end of it. Several of the pioneering Asian voyages took ten to 15 years to wind up. Presumably the accumulated products and assets could not be liquidated easily; some pioneer companies became investment trusts, shareholders deciding to lend the

[35] On the business career of Hans Thijs, see Gelderblom, *Zuidnederlandse kooplieden*, pp. 123–44, 163–71, 197–204.; On his financial transactions, see Gelderblom, "Governance."
[36] GAA NA 567/61v, 25-09-1620; the items listed in Van der Meulen's estate do not reveal bonds: Prinsen, "Uit het notarisprotocol," passim.
[37] Jonker and Sluyterman, *At Home*, p. 43; and Unger; "Nieuwe gegevens."
[38] Bruijn, Gaastra, and Schöffer, *Dutch-Asiatic Shipping*, vol 2, pp. 3–17. Compare also Jonker and Sluyterman, *At Home*, p. 43.

proceeds to the VOC.[39] Consequently, such projects required new ways of safeguarding liquidity while covering the commitment of substantial funds for unusually long periods of time.

The solution for these problems was found in the adaptation of existing forms of business organization. The early ventures to Asia were associations of merchants, but they differed from the first voyages to Italy or West Africa in being run by a committee.[40] In order to attract capital and spread risk, the directors sold subshares in the enterprise to family members, friends, and business relations. Both shares and subshares were fully understood to be limited liability, and transferable in the manner of *parten*, which helped to safeguard liquidity. All shareholders were co-owners, i.e., they shared up to the level of their participation in risks and rewards, but they had no say in the management.[41] Even so, the lure of untold riches attracted investors from all over the Dutch Republic, and even from Hamburg, Cologne, and Antwerp.[42] During the years 1595–1602, seven fleets totaling 50

[39] In 1613 final dividends were paid to shareholders in the eight ships that sailed with Van Neck in 1598, the ten ships that sailed with Van Neck in 1600, the five ships with Wolfert Hermans (1601), and the 14 ships with Warwijck (1602): Leiden University Library, Bibliotheca Thysiana (BT) 119, Ledger Hans Thijs 1603-1609, sheet added to carta 182.

[40] Once the Africa merchants of Amsterdam were united in the *Generaele Compagnie van Guinea* in 1599, this company was also run by a committee of "bewinthebbers" (directors): GAA NA 94/223, 05-07-1603; GAA NA 108/208-208v; GAA NA 196/744, 02-05-1611. Compare also Unger, "Nieuwe gegevens," p. 99.

[41] In their recent handbook (*First Modern Economy*, p. 385), De Vries and van der Woude argue that *bewindhebbers* (directors) bore unlimited liability, while *participanten* were sleeping partners with limited liability. This analysis goes back to Van der Heijden (*Ontwikkeling*, pp. 69–77) and Mansvelt (*Rechtsvorm*, pp. 44–51), who claimed that the voorcompagnieën differed from both the *partenrederij* and the VOC in that the directors had an obligation to provide additional funds in case the companies ran a deficit. However, the evidence for this claim (Mansvelt, *Rechtsvorm*, p. 47) is thin and inconclusive. The one case in which the directors of a *voorcompagnie* were asked to supply additional capital, and did so without asking for contributions from their sub-shareholders, might very well be explained by their desire or willingness to raise their own stakes in a very profitable venture. In any case, the Thijs ledgers suggest that sub-shareholders could be asked (or volunteered) to raise the value of their shares whilst preparations for a voyage were underway (BT 119, Ledger Hans Thijs, 1598-1603, fol. 28, 88). Moreover, the claim about unlimited liability runs counter to the fact, established by Mansvelt himself, that *all* shareholders in *partenrederijen*, including the directors, bore limited liability: their share in profits and losses was proportional to their investment, and they never stood to lose more than the capital they invested (Mansvelt, *Rechtsvorm*, pp. 28–38). Even if the rules governing the relationship between individual participants and "their" director differed from the rules that governed the association between directors that constituted a *voorcompagnie*, the limited liability of all involved was secured. For maritime law allowed investors in *partenrederijen* (in other words the directors of the early companies) to abandon their *part* in case their losses exceeded initial investment, while customary law stipulated that participants in any company never risked more than their investment (Mansvelt, *Rechtsvorm*, pp. 31–32; and Van der Heijden, *Ontwikkeling*). On the legal status of the *voorcompagnieën*, see also Van Brakel, *Hollandsche Handelscompagnieën*, pp. 162–65; and Van Dillen, "Nieuwe Gegevens", p. 351, and, *Aandeelhoudersregister*, pp. 23–24, 26–27.

[42] GAA NA 105/73v-74, 9 November 1606.

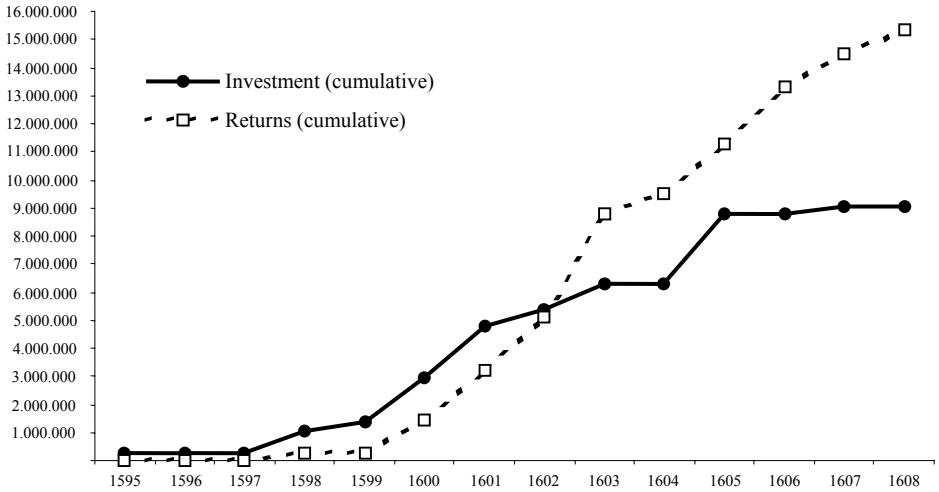

FIGURE 1

CUMULATIVE INVESTMENTS IN THE AMSTERDAM VOORCOMPAGNIEËN AND THE VOC CHAMBER AMSTERDAM, AND CUMULATIVE RETURNS FROM THE AMSTERDAM VOORCOMPAGNIEËN (1595–1608)

Sources: Annual investments are calculated on the basis of data on the total capital stock of the early companies provided by Van Dillen, *Aandeelhoudersregister*, pp. 5–11; and Jonker and Sluyterman, *At Home*, p. 43. Annual returns are calculated from the business administration of Hans Thijs, who invested in all but the first voyage from Amsterdam in 1595 (BT 119, Ledgers Hans Thijs 1595–1609. See also Gelderblom, *Zuid-Nederlandse kooplieden*, pp. 138–41, and "From Antwerp."

ships sailed from Amsterdam to Asia, while another 30 ships left the ports of Middelburg, Rotterdam, Delft, and Enkhuizen.[43]

This concentrated spurt of investment is the more remarkable for the fact that it outpaced immediate returns, at least in Amsterdam. Although the early voyages eventually proved very profitable, the sector as a whole ran a negative cash flow until 1602. This becomes apparent from a reconstruction of the cumulative investments and returns in Amsterdam's early companies, including the local chamber of the VOC. Figure 1 shows cumulative investments in various ventures at an estimated 1.4 million guilders in 1599, and 5 million guilders two years later. Notably in 1600 and 1601 total revenue of the early voyages lagged about 1.5 million guilders behind total investment. Hence the determined efforts the initiators of new trips made to find fresh sources of capital.

[43] Bruijn et al., *Dutch-Asiatic Shipping*, pp. 3–17; Gaastra, *Geschiedenis*, p. 25; and Van Goor, *Nederlandse Koloniën*, pp. 29–30.

However, the successful fundraising of the *voorcompagnieën* did not solve cash flow strains. Rather, they were shifted to individual investors. The ledgers of Hans Thijs show him working several options to mobilize capital, either through a more intensive use of existing channels, or through tapping into a wider public of savers. Between 1598 and 1602 Thijs invested 15,950 guilders in all but one of Amsterdam's *voorcompagnieën*. In addition, he raised his shares in shipping companies from 3,000 guilders in 1598 to 18,000 guilders in 1603. Moreover, in these years annual turnover of his jewelry trade tripled to 16,000 guilders.

To finance these commitments Hans Thijs reinvested profits, borrowed money, and sold a third of his shares in shipping and colonial companies to his father-in-law. As for the borrowing of money, Amsterdam's market for bonds proved sufficiently viable for Thijs to bypass his first source of credit, family members. Although deposits of relatives remained at about 10,000 guilders, by August 1602 Thijs had sold 30,000 guilders' worth of bonds to 24 different merchants and merchants' widows (Figure 2). Clearly, the money market helped Thijs to raise additional funds, and we may safely assume that other participants in colonial companies did the same to finance their investments. With buyers of bonds accepting a safe return of 7 percent to 8 percent on their savings, these investors were able to pursue the much higher expected returns from colonial trade.

The evolving pattern of trade with Asia led to a merger of the various pioneer companies into the VOC in the autumn of 1602. Even though various pioneer voyages were still underway, the flotation of the VOC went smoothly with share subscriptions amounting to 6.4 million guilders. Just below half of this capital was supplied by Middelburg, Rotterdam, Delft, Hoorn, and Enkhuizen together. The Amsterdam chamber alone raised over 3.6 million guilders in shares. As before, the company directors operated as underwriters canvassing buyers. However, the investment market had developed so rapidly that this device had lost much of its importance: only 29 percent of the capital at the Amsterdam chamber was subscribed in this way, so most savers could be reached without recourse to personal relations.[44]

Undoubtedly, many merchants who had invested in the pioneering voyages used their revenues to buy shares in the East India Company. Hans Thijs, for example, subscribed for 12,000 guilders in August 1602,

[44] Company directors subscribed 80 percent of the shares of participants who did not appear before the company's clerks in the autumn of 1602: Van Dillen, *Aandeelhoudersregister*, passim.

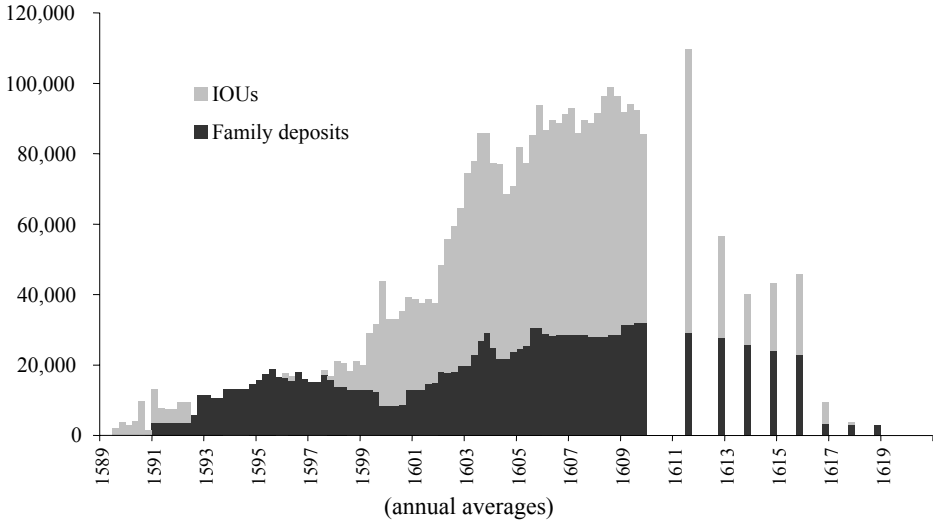

FIGURE 2
FUNDS BORROWED BY HANS THIJS (1589–1611) AND HIS HEIRS (1612–1619) FROM FAMILY MEMBERS, AND FUNDS RAISED THROUGH SALES OF IOUS

Source: BT 119 Business Ledgers Hans Thijs (1589–1609).

which he paid up step by step out of returns from the *voorcompagnieën*.[45] The pressure on funding from retained earnings was eased by a provision that shares could be paid in installments, with official calls in 1603 (25 percent), 1604 (33.3 percent), 1605 (33.3 percent), and 1607 (8.3 percent).[46] As a result of these widely spaced installments and the continuous distribution of dividends from the early companies, investments and returns broke even only months after the VOC's launch. Once the shares had been fully paid up in 1607, total Amsterdam investment in Asian trade stood at 9 million guilders, by then amply covered by returns from preceding ventures (Figure 1).

However, the installment schedule shifted the cash flow problem from the share subscribers to the company's board. The sailing of the VOC's expeditions was roughly timed to fit the four installments, but the board really needed the money months in advance to pay for the rigging and outfitting of the ships. Directors solved this problem by offering shareholders 8 percent interest on capital furnished before the calls.[47] A rough estimate of the funds raised in this manner can be

[45] The business ledgers of Hans Thijs reveal he paid his stock in the VOC in four installments. The first installment of 25 percent was due by October 1603, the second and third installment (33.3 percent each) were due by May and September 1605, respectively. The last installment was due by January 1607 (BT 119, Ledger Hans Thijs 1603-1609, fol. 87).
[46] Van Dillen, *Aandeelhoudersregister*, pp. 38–39.
[47] NA (National Archives, The Hague) 1.04.02 Inv. Nr 99, fol. 12; A standard bill obligatory to

made from the interest paid by the Amsterdam chamber in 1604, 1605, 1606, and 1608. If we assume that early payments were made on average six months before the sailing of the fleets, the company directors had between 375,000 and 750,000 guilders at their disposal to prepare the voyages.[48] Apparently these measures did not suffice, for as early as 1603 the company directors started taking money on interest and deposit on the Amsterdam money market.[49] Notably in 1604 and 1605 the company raised up to 500,000 guilders from various merchants, widows, and even a few welfare institutions, to finance the fitting of their ships.[50]

THE RISE OF A SECONDARY MARKET

The pioneering voyages taught two important lessons about the long-distance trade to Asia. First, the scale of operations would have to be bigger, requiring substantially more investment in ships and staff; second, operations would have to assume some form of permanence, for only a lasting concern with stores, yards, fortifications etc. would be able to gain a competitive edge over the English and the Portuguese. To meet these requirements, the new company stipulated that shareholders pledge their capital for a period of ten years. As a corollary, the shares were made transferable by clauses laying down a procedure for transferring ownership by matching entries in the company ledgers. Shareholders could now liquidate their holding as and when required, so these provisions in effect created a secondary market in VOC shares.[51]

Until then the market for equity claims had remained rather thin. Before 1602 very few participants in shipping companies and colonial companies sold their interests. Trade in *parten* and in shares in the early Asian ventures was limited to a narrow circle of insiders, i.e., a dozen or perhaps two in the case of shipping companies, and a few dozen in the case of the *voorcompagnieën*. For others, gathering information about the true state of affairs was simply too complicated. The shares in the early colonial companies were thus not very liquid, that is to say, they were not easy to sell at any given moment when the holder might

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bearer was drafted for this purpose by the company directors on 28 February 1603 (fol. 57). Thus much earlier than in 1621, as was suggested by Smith, (*Tijd-affaires*, p. 47).

[48] The ledgers of the Amsterdam Chamber reveal interest payments of 14,908 guilders in April 1604, 18,937 guilders in October 1605, 30,051 guilders in April 1606, and 16,191 guilders in May 1608 (NA 1.04.02, Inv. Nr. 7142, fol. 203, 357, 444, 604.

[49] NA 1.04.02, Inv. Nr. 7142, fol. 7ff; NA 1.04.02 Inv. Nr. 225, draft resolutions of the Amsterdam chamber, 19-11-1603, 25-10-1607.

[50] NA 1.04.02, Inv. Nr. 7142, fol. 1-609.

[51] The charter's full text is in: Van der Chijs, *Geschiedenis*, pp. 118–35.

require cash.[52] This was a disadvantage, which limited the attractiveness to outside investors. As a result, the shares mainly changed hands following bankruptcies or the winding up of estates.[53]

The VOC effected a radical change in three respects. First, the spread of share-ownership was much wider than ever before. The Amsterdam chamber had more than 1,100 initial subscribers on an estimated adult population of no more than 50,000 people. The huge profits of some Asian expeditions had created a keen public interest, to the point of attracting even small savers investing up to 150 guilders. Second, the charter's clear rules about ownership and transfer of shares fulfilled key requirements for a transparent market.[54] The VOC did not issue written or printed shares to subscribers, but entered their pledge in a share register that served as proof of ownership. All transfers had to be effected through matching entries made in the presence of two board members, with a small charge serving as remuneration for the bookkeepers.[55] Ascertaining ownership was sufficiently easy to forestall the use of formal paper share certificates, turning the VOC shares into recognizable assets for any interested investor.[56]

However, the chore and cost of transfer via the VOC office did have unforeseen consequences, as will become clear from discussing the third point: because subscribers had a period of several years in which to pay up their commitment, the VOC shares had a built-in speculative element from the start. Several merchants subscribed to more shares in the new company than they were planning to hold on to. Reinforced by the ever fluctuating prospects of trade, this element provided a natural breeding ground for forward trading, which the hassle of transferring ownership did little to diminish, because it created an incentive to buy or sell for future delivery and then complete the transaction by mutual

[52] This is not to say that shares in the voorcompagnieën *could* not be transferred, as Van Brakel claimed in 1908 (Van Brakel, *Hollandsche handelscompagnieën*, p. 153). The notarial archives of Amsterdam hold about a dozen transfers of shares in the Asian expeditions between 1597 and 1606: GAA NA 33/107-108, 10-09-1597; GAA NA 10/59, 7 and 14 March 1598; GAA NA 33/396, 08-05-1600; GAA NA 34/152, 14-06-1602; GAA NA 96/224v, 07-04-1604; GAA NA 101/46, 02-08-1605; GAA NA 101/55v-56, 13-08-1605; GAA NA 103/75, 28-06-1606; GAA NA 103/165, 31-08-1606; GAA NA 105/52, 31-10-1606.

[53] Hart, "Rederij," pp. 108–09. Compare for example: GAA NA 24/274, 01-10-1598; GAA NA 11/2v, 09-09-1600; GAA NA 103/75, 28-06-1606.

[54] The case for secure property rights as the *conditio sine qua non* for economic growth has been convincingly made by Douglass C. North. See, for example, his *Structure*. The beneficial effects of secure property rights on the development of capital markets have recently been spelled out by De Soto, *Mystery*.

[55] Smith, *Tijd-affaires*, pp. 31–32, 37, 44–45; To make sure the directors were present, they were fined one guilder for not showing up (NA 1.04.02 Inv. Nr. 225, fol. 32).

[56] The scrips that some collectors today consider the world's "oldest shares" are nothing of the kind: they are quittances for the last installment: Van Dillen, *Aandeelhoudersregister*, pp. 32–33.

clearing, that is settling the balance of claims outstanding rather than transferring any shares.[57] From here it was only a small step to introducing sale-repurchase deals (repo transactions) on shares, vehicles of forward dealings still in use today.[58] Some traders even began to experiment with futures trading, i.e., dealing in contracts for future delivery.[59] As trade in VOC shares developed, the premium on developing ways of escaping transfers increased, to the point of putting an incentive on fraud. The company secretary was discovered forging transfers, so in January 1612 the board introduced new and more onerous instructions. Transfers were to be registered in a separate ledger (*boeck van affschrijvingen*), and all transfers of shares had to be effected in the presence of a notary, or occasionally one of the city's aldermen.[60] To circumvent this obvious handicap for a secondary market, traders relied on clearing to settle their mutual claims, rather than actual transfers of shares.[61]

Speculative trade in VOC shares appears to have begun immediately after flotation in August 1602. Prices of 14–15 percent above par, presumably for shares in the Amsterdam chamber, have been recorded for September 1602. In following months prices declined to around 104 percent.[62] However, the first call for capital only came in February 1603, and the first share transfers registered by the Amsterdam chamber dated from March 1603.[63] Earlier deals must have been for future delivery for the simple fact that at the time there was nothing to transfer but paper promises. The actual transfer of shares only began after the first call for capital. Figure 3 shows that between 1603 and 1607 anything between 100 and 200 shares per year changed hands,

[57] Smith, *Tijdaffaires*, pp. 44–45; traders also had to find ways to get around the fact that the VOC office was sometimes closed for protracted periods, either because the office staff had to accompany directors on business elsewhere in the Republic, say to a meeting in Middelburg, or because the seasonal pressure of work such as the annual drafting of the accounts, which by the later seventeenth century could take as much as two weeks; An example of the former instance in: BT 215 A1, Letter from Jacques de Velaer to Anthoni l'Empereur, 03-04-1609; compare Smith, *Tijdaffaires*, p. 45.

[58] Repo transactions imply a cash payment in return for the transfer of a security. The contract is completed when the borrower returns the money with interest, and repossesses the security. Jonker, *Merchants*, pp. 90–93.

[59] Compare the notarial deeds published in Van Dillen, "Isaac le Maire," pp. 46–47, 78–83, 89–91.

[60] The principal notary involved was Jan Franssen Bruyningh, well known for his activities on Amsterdam's market for shipping services: Christensen, *Dutch Trade*. Other notaries included Frederick van Banchem, Pieter Bruyns, Willem Benningh, Cornelis Meurs, Jacob Meerhout, Palm Mathijsz, and Jacob Gijsbertsz (NA 1.04.02 Inv. nr. 7066/303ff).

[61] Compare Neal, "How it all Began," pp. 122–23.

[62] Smith, *Tijd-affaires*, p. 40; and Van Dillen, "Isaac le Maire," p. 15.

[63] NA 1.04.02 Inv. nr 7066, *Journaal van Actiën VOC Amsterdam* (1602-1612), fol. 72-440.

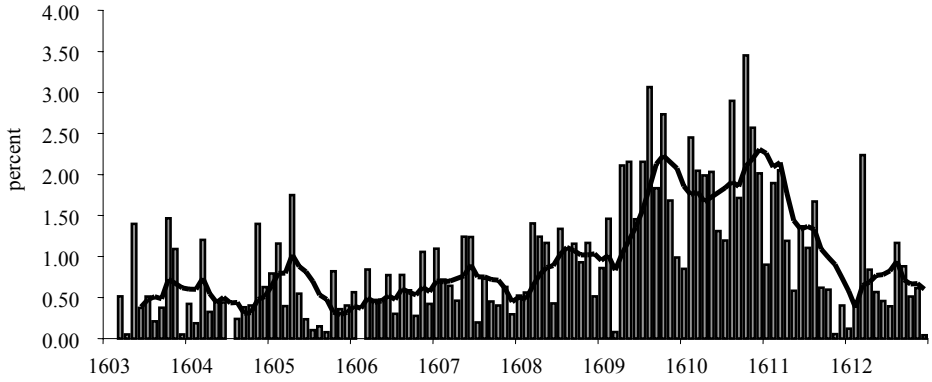

FIGURE 3
MONTHLY TRANSFERS OF SHARES OF THE AMSTERDAM CHAMBER OF THE VOC, CALCULATED AS A PERCENTAGE OF THE TOTAL STOCK OF CAPITAL, 1603–1612
(with six months' moving average)

Source: NA 1.02.04 Inv. No. 7066.

representing 6–7 percent of the Amsterdam chamber's capital. Trade was brisk enough for printed standard share-transfer forms to be introduced in 1604.[64] By the end of 1607 about a third of the capital of the Amsterdam chamber had been transferred. Selling shares had now become so common that the VOC board attempted to have its ten-year charter extended to 20 years, arguing that investors could get their money back from the market immediately and thus would not be disadvantaged from an extension.[65]

In the first few years after the establishment of the VOC, transfers show a marked pattern of peaks and troughs. Some months saw no transfers at all, while in others mounting transfers must have kept the company clerks very busy. These first transfers appear to have been driven less by regular securities trading than by individual investors facing a liquidity squeeze. Indeed, several peaks coincided with successive calls for capital in the spring of 1603, in December 1604, and in December 1605. Only in 1606, after 90 percent of the capital had been paid, did transfers assume a smoother pattern. To be sure, the company's board gave investors considerable leeway in meeting their obligations. Some paid the whole amount at once, others waited for the official calls, a third group clearly concluded a private agreement for spreading payments over as much as 12 installments.[66] If none of these

[64] Copies of this form dating from 27 August 1604 are found in the business papers of Hans Thijs (BT 112, Nr. C-2); The standard form had already been drafted in February 1603, however (NA 1.04.02, Inv. nr. 99, fol. 55–56).
[65] Klerk de Reus, "Geschichtlicher Ueberblick," p. 12.
[66] Van Dillen, *Aandeelhoudersregister*, p. 37.

measures lightened the financial burden, shareholders had no other choice but to sell their shares or face foreclosure.[67]

The liquidity squeeze encountered by some of the shareholders is exemplified by the case of Pieter Lintgens, the single biggest investor in the VOC with subscriptions of 60,000 guilders in the Amsterdam chamber and another 45,000 guilders in the Zeeland chamber. This position was clearly a speculative one, i.e., Lintgens did not have the money in 1602 but expected to fund his commitment from future earnings and rising stock prices. This strategy no doubt built on the observation that most of the *voorcompagnieën* had begun to pay dividends about two years after the expeditions had sailed. Following these precedents, a first VOC dividend might justifiably be expected in the spring of 1605, by the time when the second call fell due. Lintgens managed to meet the first call by spreading his payments in three installments, but he could not meet the next payment. Thus, in April 1605 he sold half his share in the Amsterdam chamber. Just before the third call in December 1605 he sold his remaining stock, for there were no dividend payments whatever on the horizon.[68]

Although only seven shareholders bought and sold stock more than ten times between 1603 and 1607, in the next five years their number rose to 57. Total turnover of shareholders buying *and* selling their stock quadrupled from 0,5 to 2 million guilders (Table 1). Among these speculative traders were six members of the oldest documented bear syndicate, led by former VOC director Isaac Lemaire.[69] This combine of ten merchants attempted to push down share prices with the aim of forcing the company board to change its policy.[70] The exposure of the dealings of Lemaire in 1610 has led historians to highlight his speculative trading as a unique phenomenon. The sheer volume of share transfers belies this. Indeed, the bear syndicate almost appears to have been a sideshow, for during 1608/09 its volume of transfers amounted to less than 20 percent of all transfers registered by the Amsterdam Chamber, and the share dropped to 11 percent during 1610.[71] Conse-

[67] In November 1603 the Amsterdam Chamber repossessed and then resold shares worth 28,000 guilders from 13 shareholders who had failed to pay their first installment: NA 1.04.02. Inv. Nr. 7066 fol. 82-90.

[68] NA 1.04.02. Inv. Nr. 7066 fols 77, 78, 81, 91, 93, 94, 97, 100, 103, 104, 112, 115, 116, 118, 119, 120, 123; and Van Dillen, *Aandeelhoudersregister*, pp. 40–41.

[69] It should be noted that stock transactions of Isaac Lemaire and of one other member of his bear syndicate, Vincent Benning, are not included in Table 1, for these two merchants only sold shares. In 1610 Lemaire did away with 69,400 guilders worth of shares, while in the same year Vincent Benning sold shares worth 750 guilders (NA 1.04.02/7066, fol.182-199, 201).

[70] Van Dillen, "Isaac le Maire," passim.

[71] Calculated on the basis of: NA 1.04.02 Inv. nr 7066. The very nature of forward trading implies that the company's registers did not necessarily reflect all of the syndicate's contracts

TABLE 1
SHAREHOLDERS WHO BOUGHT AND SOLD SHARES IN THE AMSTERDAM CHAMBER OF THE VOC BETWEEN 1603 AND 1612

	1603–1607			1608–1612		
Number of Transactions	Number of Traders	Average Purchases	Average Sales	Number of Traders	Average Purchases	Average Sales
2	39	1,688	1,451	62	2,064	2,189
3	23	2,689	3,575	43	3,414	4,670
4	15	2,677	3,723	33	3,525	3,867
5	9	6,350	2,989	18	5,528	5,088
6–10	24	7,885	6,088	50	8,025	9,430
>10	7	10,700	22,500	57	20,727	20,151
Total	117	4,181	4,489	263	7,891	8,281
Total turnover		489,150	525,190		2,075,344	2,177,917

Source: NA 1.02.04 Inv. Nr. 7066.

quently, the active traders formed a large and varied crowd indeed, sufficiently vociferous and powerful to thwart the VOC board in its efforts to get a legal ban on forward trading and force it to quell the speculative unrest by agreeing to pay dividends at last.

Meanwhile, trade in VOC shares was not limited to the Amsterdam chamber. The rules for the transfer of stock applied to all chambers, so it comes as no surprise that investors in Middelburg, Rotterdam, Delft, Hoorn, and Enkhuizen also traded their shares in the first decade of the seventeenth century. This is evident not only from incidental transfers registered with Amsterdam notaries, but also from the VOC administration in Enkhuizen.[72] In this port of 20,000 inhabitants, situated north of Amsterdam, 30 percent of the total stock changed hands between 1604 and 1608, a share comparable to that of the Amsterdam chamber.[73] To be sure, more than half of these shares was transferred by two Amsterdam merchants who, in 1602, had invested large sums of money on behalf of fellow citizens.[74] This suggests that Amsterdam was the principal market for all VOC shares in the first decade of the seventeenth century.

concluded for purchases or sales. However, because this is also true for other traders, the registers may very well reflect the actual share of the bear syndicate in total turnover in the futures market.

[72] See, for example, the notarized transfers of shares in the Delft Chamber: GAA NA 98/53v, 17-05-1604; GAA NA 105/35, 11-10-1606; GAA NA 105/112v, 07-12-1606; GAA NA 106/64v-65, 18-12-1606; and the Enkhuizen chamber: GAA NA 105/121, 14-12-1606.

[73] On a total capital of 567,000 guilders, stock transfers amounted to 168,685 guilders (Willemsen, "Beleggers," p. 78). Population figures for Enkhuizen (7,750 in 1561; 21,878 in 1622) are from: Lucassen and Lourens, *Inwoneraantallen*, p. 60.

[74] Willemsen, "Beleggers," pp. 76–79.

DISCOVERING THE BENEFITS OF A SECONDARY MARKET

VOC shares proved popular with investors not only because of prospective dividends, but also because they could easily be sold in case of liquidity constraints. This liquidity of VOC shares had unexpected consequences for the Amsterdam capital market in the early seventeenth century. The regular trade in VOC shares turned them into an increasingly attractive collateral for loans on the Amsterdam money market. To be sure, at the turn of the seventeenth century money could be borrowed against almost anything. The 1582 Antwerp *Costuymen* already contained provisions relating to the issuing of IOUs on collateral of goods or property.[75] The Amsterdam notarial records hold deeds securing loans on the "person and goods"[76] of merchants, but also on their merchandise, jewelry, ships, or shipping shares, all dating from around the turn of the seventeenth century.[77] The viability of such lending depended on several factors. Lender and borrower had to agree on terms and on valuation, the latter an obvious source for disputes in the absence of generally accepted yardsticks for quality and price of, say, parts in a five-year-old ship, or a lot of raw wool. Creditors had to take a borrower's word to provide them with a guarantee against any conflicting rights, with custom and official regulations offering little support.[78] Commodity loans in particular suffered from the risk of material deterioration, and from uncertain sales prospects if the borrower defaulted and creditors had to take possession and sell.[79]

Consequently, merchants were keen to use alternatives to evade these complications. Public debt issues provided one obvious vehicle. However, two of the three main varieties then common, life and term annuities, had a clear drawback in generally being made out to named persons. Transfer was cumbersome and subject to a special tax, which limited the usefulness of these securities as collateral. The third form, obligations or bonds, suffered no such handicaps. Intended as short-term credit paper, they ran for three to six months and could be either to

[75] *Antwerpse Costuymen*, 1582, Title LIII-9, pp. 399–400.
[76] GAA NA 209/101, 02-04-1610; GAA NA 200/349 18-10-1619.
[77] For merchandise, see GAA NA 108/165, 29-08-1607; and GAA NA 120/70v, 02-06-1610. For jewelry, see GAA NA 32/402 (22-04-1596); and GAA NA 120/121-121v, 06-09-1610. For ships, see GAA NA 96/159, 26-01-1604. For shipping shares, see GAA NA 212/179v, 10-10-1617.
[78] In 1631, 19 notaries declared before the Amsterdam city council, that a lender could not claim the property of a mortgaged good from a third party if the latter had bought it in good faith from the borrower. The notaries added that this had been the case as long as they could remember. Considering that one of them had been working in Amsterdam since 1595, there is little doubt that money lending on the security of movable goods was already common practice in Amsterdam before 1600: Noordkerk, *Handvesten*, vol 2, p. 536.
[79] Jonker, *Merchants*, p. 111.

a specific person or to bearer. The States of Holland initially used obligations as an expediency, but soon found that the market allowed them to roll over such paper on expiry. Indeed, in 1609 attempts by the States of Holland to convert an outstanding loan foundered on the holders' unwillingness to accept annuities for them. But even if the 4 million guilders worth of public bonds in 1609 measured up to the VOC shares available to investors in Amsterdam at the time, there is no firm evidence in the form of notarial deeds documenting transactions or transfers, nor any indications on regular prices to suggest an active secondary market in the period under investigation.[80]

As it turned out, VOC shares offered an ideal loan collateral: a claim on a company known to all; very liquid, so easy to sell in case of default; with daily price quotations for quick valuation; and with ownership easily ascertained.[81] The earliest example of the use of VOC shares as collateral dates from the very month in which the company was founded. In August 1602 the Portuguese merchant Manuel Rodrigio Vega pledged VOC shares worth 27,600 guilders plus 4,200 guilders in cash to Dirck van Os for the latter to stand surety for the release of a Spanish army commander in exchange for the release of Dutch prisoners of war.[82] The first explicit references to the borrowing of money on security of VOC shares are from a later date, however. In 1607 a nobleman borrowed 2,000 guilders at 8 percent from the Amsterdam merchant Cornelis van Lockhorst on the security of a VOC share of 3,000 guilders plus any dividends accruing.[83] In the same year the Amsterdam merchant Sion Lus proposed that his creditors "raise 7,000 or 8,000 guilders on his jewelry and letters in the East India Company" in order to pay part of his debts to them.[84]

The extent to which shares in the early companies and the VOC were pledged as collateral for loans is difficult to establish. IOUs were generally private contracts, arranged without a public notary, so very few have survived. However, there are several indirect indications for this particular use of company stock. Notarial transactions of shares

[80] Houtzager (*Lijf- en losrenteleningen*, pp. 132, 135,136, 142) gives figures for 1609 (4,356,001 guilders), 1616 (5,218,547 guilders); 1618 (5,276,159 guilders), and 1630 (10,531,071 guilders). See also Tracy, *Financial Revolution*, pp. 207–08; and Dormans, *Tekort*, pp. 24, 58–61, 136, 201. Based on interest payments, Wantje Fritschy has recently estimated the total value of bonds of the States of Holland at 14 million guilders in 1609. However, she does not provide conclusive evidence on the relative share of annuities and obligations in these interest payments: Fritschy, "Financial Revolution," p. 78.

[81] Compare on the use of VOC and WIC shares as collateral in the eighteenth century: Riley, *International Government Finance*, p. 31.

[82] Vaz Dias, "Deelname," pp. 43–58.

[83] GAA NA 108/166, 29-08-1607.

[84] GAA NA 20h/75, 07-03-1607.

contained a standard formula that guaranteed buyers the absence of collateral claims, a clear sign that shares were used to cover loans.[85] Moreover, in 1701 the company's first historian, Pieter van Dam, wrote "that from then [1602] on the shares have become negotiable ware, that one could get rid of at all times, like one still can, through sale or barter, *or that one borrows money against it*, allowing everyone to part with his participation."[86] An edict issued by the States of Holland in 1623 to regulate forward trading in shares of the Dutch East and West India Companies, mentioned not only the borrowing of money against company shares but also specified the procedure for foreclosure of shares in case borrowers defaulted.[87] By the 1640s the Amsterdam stock exchange had a regular repo trade complete with standard printed transaction forms, but the main features probably dated from the 1620s.[88]

The Thijs ledgers demonstrate that at least this merchant quickly realized the advantages of using VOC shares as loan collateral. Thijs began to circulate IOUs in 1598 to finance the expansion of his business, including investments in the *voorcompagnieën* (see Figure 2). From 1602 onwards there is a clear relationship between Thijs's borrowing on the money market and the amount of VOC shares he owned. Figure 4 shows his debts and the value of shares as a percentage of the outstanding IOUs, the bottom line taking the shares at nominal value, the top line taking them at market price, i.e., multiplied by the nearest price data available. The data show that Hans Thijs's debts rose in tandem with his share holdings, which suggests he used the shares as collateral.

Until the summer of 1605, Thijs used this method prudently, his 26,000 guilders' worth of shares covering no more than 20–30 percent of debts. By the summer of 1605, this ratio had risen to 40–50 percent, at which it remained stable until the summer of 1608, when Thijs's debts peaked at about 70,000 guilders. He used part of this money to buy additional shares, raising his VOC stake from 26,000 guilders to more than 40,000 guilders in 1609, simultaneously reducing his debt to around 60,000 guilders. This brought the ratio of debt to nominal share value to 75 percent by the end of 1609.

By that time rising share prices probably enabled Thijs to rely exclusively on shares to back his IOUs. Calculating the market value of

[85] The formula read: "*vrijen ende vrij te waren van alle actie ende aensprake die sijnnent halven daer op soude mogen wezen gedaen*." Compare for example: GAA NA 33/215a, 20-10-1598; GAA NA 106/64v-65, 18-12-1606

[86] Van Dam, *Beschryvinge*, p. 143, italics added.

[87] Van Dam, *Beschryvinge*, p. 147.

[88] Smith, *Tijd-affaires*, p. 61.

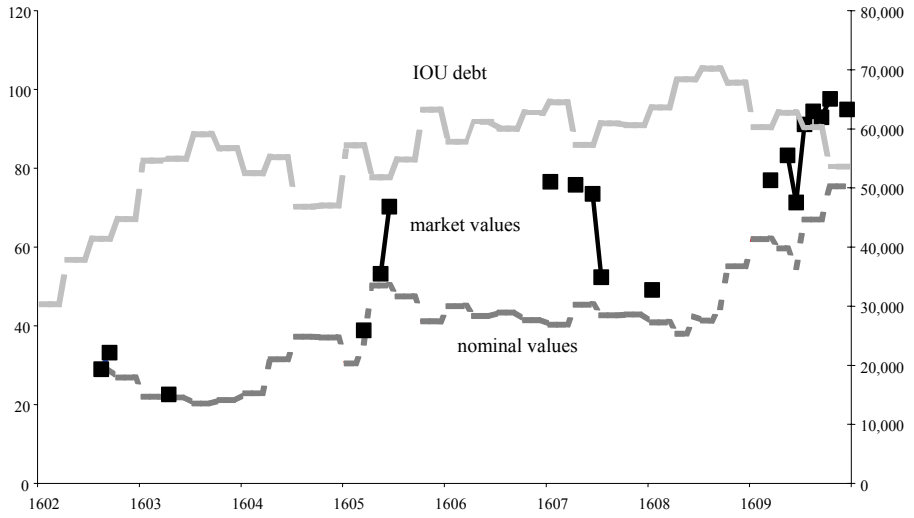

FIGURE 4
HANS THIJS'S IOU DEBTS (RIGHT SCALE) AND HIS VOC SHARES AS A PERCENTAGE OF HIS IOUS (LEFT SCALE), 1602–1609

Sources: IOUs outstanding: BT 119 Business Ledgers Hans Thijs (1598–1609); Market value VOC shares calculated from: Van Dillen, "Isaac Lemaire," pp. 15, 17, 21, and *Aandeelhoudersregister*, pp. 33–34; and BT 119 Ledger Hans Thijs 1598–1603, fol. 107, 127, 140, 209, 222, 203; BT 119 Journael E; GAA NA Card Index: 106/229, 01-05-1607; 107/96v- 97v, 08-08-1607; 108/127, 21-07-1607; 62 (D. Mostert), 14-12-1614; 115/ 6v-7, 29-08-1609; 120/7-7v, 22-04-1610; 119/124v-125, 13-05-1610; 197/519, 06-04-1613; 119/ 218, 10-08-1610; 119/23v, 10-03-1610; 209/174v, 21-07-1610; 119/67-67v, 16-04-1610; 120/2, 09-04-1610; 196/588, 22-10-1622; 267/463, 12-06-1610; 209/176, 02-08-1610; 120/99v, 10-08-1610; 209/181v, 16-08-1610; 120/18v, 03-09-1610; 196/583, 14-10-1610; 124/ 91v- 92, 02-06-1611; 196/ 597v- 598, 04-11-1610; 124/91v- 92, 02-06-1611.

VOC shares before the 1620s is a hazardous undertaking, for we only have scattered references from a variety of sources. However, the available data do suggest a clear trend. During the summer of 1605, the share price rose from about 105–106 percent to 125–140 percent on news about successes against the Portuguese in the Moluccas.[89] At that stage Thijs does not appear to have used the oxygen supplied by the market's rise to increase his debt, for there is no clear correlation between the size of the debt and the value of his stock. When prices dropped towards the end of 1607, Thijs trimmed his debt but not proportionally. However, during 1609 prices shot up again, and Thijs's debt rose in tandem. By the end of that year, the market value of his shares covered nearly his whole debt. The available data do not allow us to see what happened during 1610/11, but the assets and liabilities of

[89] Van Dillen, "Le Maire," pp. 34–37.

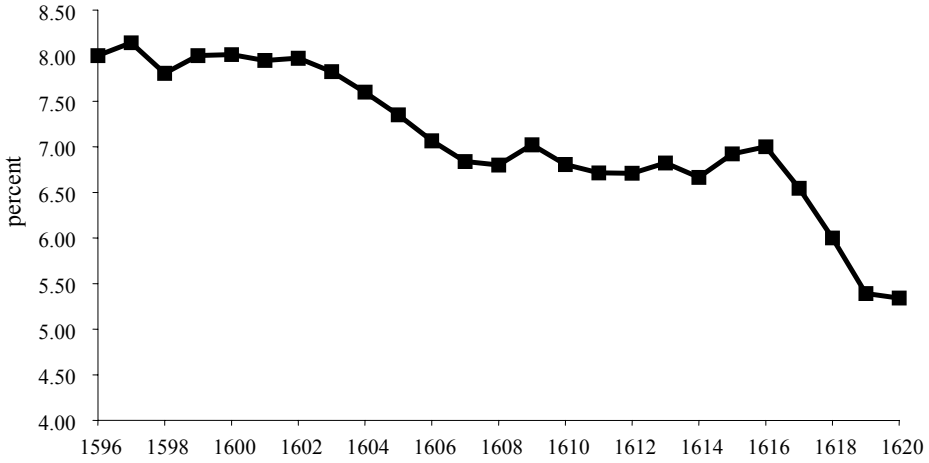

FIGURE 5
ANNUAL AVERAGE INTEREST RATE PAID ON THE AMSTERDAM MONEY MARKET (1596–1620)

Source: See the Appendix.

Thijs's estate in 1611 show that he switched completely to using shares to support his IOUs.[90] Stock matches creditors, family deposits equal debtors, and VOC shares estimated at 120,000 guilders market value balance IOUs of 100,000 guilders. Clearly Thijs now relied on the shares to fund his floating debts. The executors of his estate took a more cautious approach, however, and rapidly reduced the outstanding debts (Figure 2).

THE FRUITS OF INNOVATION

The creation of a vigorous market in VOC shares coincided with falling interest rates on short-term borrowing (Figure 5). Standing at 8 percent a year between 1596 and 1602, short rates dropped to 6.75 percent by 1608, at which they remained more or less stable for the next seven years.[91] After 1616 another 1.25 percent drop occurred, pushing the interest rate slightly below 5.5 percent in 1619 and 1620. The declining interest rates are remarkable because Amsterdam experienced a prolonged commercial boom from 1590 to 1620. In addition to the funding of traditional trade between the Baltic Sea and the Atlantic coast of Portugal, Spain, and France, Amsterdam merchants needed

[90] Gelderblom, *Zuid-Nederlandse kooplieden*, p. 144.
[91] Note that these interest rates differ from those cited by Peter Spufford from unpublished work by Pit Dehing: 10 percent on average between 1600 and 1604, 8 percent in 1610, 6.5 percent on average between 1610 and 1614, and 6.25 percnet in 1620: Spufford, "Access."

capital for countless long-distance enterprises in Europe and beyond. Judging by the interest rates, this growing demand for capital does not appear to have strained supply at all.

Our reconstruction of VOC finance bears out two complementary explanations for the declining interest rates on the Amsterdam money market. First, the lower price of credit probably reflects a growing supply. Immigration was one source. Between 1585 and 1620 the Amsterdam merchant community grew from less than 500 people to about 1,500. The immigration of Antwerp merchants alone increased the city's capital stock by an estimated 50 percent.[92] Retained earnings from trade were of course the other main source. Indeed, the sheer volume of this flow gives some food for thought.[93] The intra-European trade generated sufficient amounts of money for the early stages of overseas expansion to West Africa, the Caribbean, and Asia, after which the Asian voyages more than paid for themselves (Figure 1). By 1603, returns from the first Asian trips outstripped the capital invested in the VOC by 2.5 million guilders, and five years later the surplus stood at no less than 6.3 million guilders. These figures give some indication as to the scale of Marx's conception of original accumulation. International trade could generate a very substantial volume of capital indeed, and as the Amsterdam example demonstrates, it could do so within a generation.

Second, the drop in interest rates demonstrates the success of Amsterdam's secondary market, funneling a tidal wave of capital into productive purposes, notably short-term loans, by virtue of a vigorous securities trade with allied credit techniques. The VOC shares were a crucial innovation here, improving the match between supply and demand by providing a convenient and highly liquid collateral. They were widely recognized as solid due to the company's huge size and its close connections to the States-General. The lure of exotic riches created a ready market for them. Ownership and price were easily established; in case of default foreclosure and sale were easy. In other words the use of VOC shares as collateral lowered information and enforcement costs, it mobilized funds that otherwise would have remained idle, and thus pushed up market volume and lowered interest rates. In this capacity the securities-based credit mechanism would have

[92] Gelderblom, "From Antwerp."

[93] The net result of one of the early voyages to West-Africa was 50 percent on an investment of 40,000 guilders for two years: Van Gelder, "Scheepsrekeningen," pp. 248–57. To be sure, shipping within Europe was considerably less profitable. W. Brulez ("Scheepvaartwinst") has estimated net returns to be 10 percent at most, an estimate supported by evidence on the profitability of Hans Thijs's trade (Gelderblom, *Zuid-Nederlandse kooplieden*, pp. 280–83, 290).

served to balance supply and demand between markets with very different rhythms of investment and returns, say between the Baltic run, hectic from March to September but dormant in winter, and the Mediterranean and West African trade with their 12-month cycles. Merchants now had an option to employ their temporary surplus cash remuneratively at little risk. Rentiers and widows also had a new opportunity to invest their savings.

The Thijs and Bosschaert papers demonstrate to good effect how impersonal credit techniques widened credit circles. Hans Thijs sold IOUs to 70 different creditors, only ten of whom can be identified as belonging to his network of commercial agents or fellow jewelers. This small group bought 30 percent of Thijs's outstanding debt between 1595 and 1610. The rest was taken by a very diverse group of people, including 24 merchants from the Northern Netherlands and nine merchants' widows. The same was true for the Antwerp merchant Paulus Bosschaert. In 1620 he owed 60 percent of his outstanding debt to 38 fellow immigrants, and the remaining 40 percent to 27 Amsterdam merchants.[94] Clearly the money market mechanisms enabled a transfer of funds between different local groups, very important in a merchant community consisting of large numbers of immigrants from various parts of the Low Countries, Germany, Portugal, and the British Isles.

A REVOLUTION COMPLETED

The rapid development of a secondary market in company shares more or less coincided with the emergence of new patterns in public finance amounting to the creation of a secondary market in public debt. By the 1590s the States of Holland found that life and term annuities, issued on the security of tax revenues, no longer sufficed to finance its needs as the war with Spain imposed ever rising burdens. The States began selling bonds as short-term expediencies, initially for small amounts and directly to merchants. Within a decade or so a regular system of sales through tax receivers and loan contractors had developed. Because the bonds were regularly rolled over on expiry rather than redeemed, this debt rapidly became medium- to long-term in fact, if not in intention. Bonds were made out to bearer and could thus be transferred more easily than annuities, which were made out to named persons and subject to a transfer fee. By 1609 an estimated four million guilders had been raised in this way, a substantial amount but still only a fraction of the States' debt. In 1618 the amount of bearer

[94] GAA NA 567/61v, 25-09-1620.

bonds issued stood at 5.2 million guilders, or 20 percent of the *total* debt.[95] The States continued to prefer annuities, and only reluctantly gave in to market demand for bearer bonds. By 1650 the ratio of annuities to bearer bonds was still 40:60.[96]

Over time, the rising amount of public bonds in circulation would to all likelihood have engendered an increasingly lively secondary market of the sort Dickson described for Britain. As things happened, the introduction of VOC shares moved developments into a higher gear. The prospects of speculative gains without serious loss of liquidity created a booming secondary market offering a wide range of allied credit techniques.

Thus, the course of events in Holland after 1600 runs counter to common opinion about the importance of a publicly traded government debt as the origin of secondary markets. The VOC shares provided the crucial breakthrough, not government bonds. As a matter of fact, though, the secondary market itself resulted from a fortuitous conjunction between public and private finance. On the one hand it was preceded by decades of carefully managed public debt issues. By the 1580s annuities were sufficiently well established to serve as trusted instruments for a diverse public, including merchants, widows, orphans, and charity institutions.[97] On the other hand, the early introduction of IOUs in Antwerp had trained merchants and investors in the use of private debt instruments, while *partenrederijen* had pioneered the legal concepts of limited liability and transferability of shares. In short, VOC shares only found rapid and widespread acceptance after 1602 because of the prior establishment of trust in paper claims and, presumably, a rudimentary trade in them. However, when they did, VOC shares provided the catalyst, creating securities trading, forwards and futures, and a range of credit techniques more or less from scratch. In as much as public securities were traded and used as loan collateral before 1602, they lacked the speculative element that created the secondary market for VOC shares, and thus could never have given such a market the kiss of life.[98]

Finally, the precocious development of the Amsterdam securities market as documented by us does raise the pressing question why its evolution subsequently seems to have stalled. The VOC did not capitalize on the opportunities created. Until the company's demise in

[95] Houtzager, *Lijf- en losrenteleningen*, 132, 135,136, 142).
[96] Dormans, *Tekort*, pp. 58–59.
[97] Tracy, *Financial Revolution*, pp. 156–63; and 't Hart, "Renteniers."
[98] On the importance of futures trading, see Levine, "Financial Development"; and Jonker, "Competing in Tandem."

1795, the board used bonds to meet its financial needs whereas judging by share prices and dividends, shares would have been the better option for most of this period. Moreover, only two other limited-liability joint-stock companies were successfully floated in the republic: the West Indische Compagnie, a monopoly company for the Atlantic trade, in 1621, and the Maatschappij voor Assurantie, Disconto en Beleening der Stad Rotterdam, an insurance company, in 1720. Public borrowers showed no rush to exploit the new opportunities either. The amount of bearer bonds in the total debt of Holland rose gradually, as we have seen, but such bonds were issued in very large amounts at once only in 1672, when a simultaneous attack from France, Britain, and two German princes created emergency circumstances. The market began to show its full potential only during the second half of the eighteenth century, when Amsterdam financiers launched a string of innovations ranging from stock substitution schemes to unit trust funds and large scale foreign bond issues. What happened during this long period of apparent stagnation? We hope to present an answer in due time.

Appendix: Interest Rates on the Amsterdam Money Market, 1595–1620

Our reconstruction of the price paid for credit on the Amsterdam money market is based on one large, and five smaller series of debt contracts. The business administration of the Antwerp merchant Hans Thijs contains references to almost 600 IOUs sold or rolled over by Thijs between 1598 and 1609 (1).[99] The balance sheet drawn up shortly after his death in 1611 holds references to 52 IOUs (2).[100] Between 1612 and 1615 the executors of Hans Thijs's estate sold a few dozen additional obligations to finance the execution (3).[101] Debt contracts with relatives were excluded, for the interest rate charged in these cases differed from the market rate.[102] In addition to the data from Thijs's business papers, debt contracts were found for three other merchants. In the archives of the Amsterdam Orphan Chamber (Weeskamer) the papers of the estate of Meynert Claesz hold references to nine IOUs (4),[103] whereas another 34 are mentioned in the estate of Cornelis Francq (5).[104] Finally, the inventory of the estate of Paulus Bosschaert, drawn up by an Amsterdam notary, contains references to 62 IOUs (6).[105]

The references numbered 2–6 do not explicitly mention the interest rate paid on IOUs. Rather, merchants added the interest to the principal in one entry. However, because principals always were round figure (900, 1,200, 1,500, 2,400, and so on), the

[99] BT 119 Ledgers Hans Thijs, 1595–1609
[100] BT 119 Journael E (1611)
[101] BT 112, c2
[102] See Gelderblom, "Governance")
[103] GAA 5073), Nr. 15, lade 160
[104] GAA 5073, Inv. Nr 968a
[105] GAA NA 567/61v, 25-09-1620

APPENDIX TABLE 1
ANNUAL AVERAGE INTEREST RATE ON IOUs ISSUED BY AMSTERDAM MERCHANTS BETWEEN 1596 AND 1620

	1		2		3		4		5		6	
Year	% Rate	*N*	% Rate	*N*	% Rate	*N*	% Rate	*N*	% Rate	*N*	% Rate	*N*
1596	8.00	1										
1597	8.14	3										
1598	7.80	10										
1599	8.00	22										
1600	8.01	27										
1601	7.95	23										
1602	7.97	47										
1603	7.82	69										
1604	7.60	63										
1605	7.43	66										
1606	7.07	64										
1607	6.84	58										
1608	6.81	66					6.25	1				
1609	7.03	56					6.90	6				
1610	6.84	11					6.59	2				
1611			6.71	38								
1612			6.66	14	6.77	13						
1613					6.77	6						
1614					6.69	8						
1615					6.22	7			6.60	2		
1616									7.38	4	6.50	1
1617									6.55	28		
1618											6.00	3
1619											5.39	21
1620											5.34	37

Notes: *N* is the number of contracts.
Sources: (1) BT 119 Ledgers Hans Thijs, 1595-1609; (2) BT 119 Journael E (1611); (3) BT 112, c2; (4) GAA 5073, Nr. 15, lade 160 (5) GAA 5073, Inv. Nr 968a; (6) GAA NA 567/61v, 25-09-1620

interest rate could be inferred from these entries. The few cases in which this procedure yielded a highly unlikely outcome were not included in the time series. To calculate the annual average interest rate, all debt contracts were weighed according to their size. For the complete series of IOUs of Hans Thijs (1), weights were also attributed according to the maturity of the loans. Figure 5 is based on Appendix Table 1, which contains the annual average interest rate calculated from the six different series of contracts. In case two figures for one year appear (1608–1610, 1612, 1616) the interest rate in Figure 5 is calculated with data from both series.

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